



US008162953B2

(12) **United States Patent**  
**Dishler et al.**

(10) **Patent No.:** **US 8,162,953 B2**  
(45) **Date of Patent:** **Apr. 24, 2012**

(54) **INSERTION SYSTEM FOR CORNEAL IMPLANTS**

(75) Inventors: **Jon Dishler**, Cherry Hills Village, CO (US); **Ned Schneider**, Aliso Viejo, CA (US); **Alan Ngoc Le**, Lake Forest, CA (US)

(73) Assignee: **ReVision Optics, Inc.**, Lake Forest, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 201 days.

(21) Appl. No.: **11/692,835**

(22) Filed: **Mar. 28, 2007**

(65) **Prior Publication Data**

US 2008/0243138 A1 Oct. 2, 2008

(51) **Int. Cl.**  
**A61F 9/00** (2006.01)

(52) **U.S. Cl.** ..... **606/107**

(58) **Field of Classification Search** ..... 604/294;  
606/107, 166; 623/4.1, 5.11, 5.14, 6.11–6.13  
See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

2,714,721 A	8/1955	Stone, Jr.
3,168,100 A	2/1965	Rich
3,343,657 A	9/1967	Speshyock
3,379,200 A	4/1968	Pennell
3,482,906 A	12/1969	Volk
3,743,337 A	7/1973	Crary
3,770,113 A	11/1973	Thomas
3,879,076 A	4/1975	Barnett
3,950,315 A	4/1976	Cleaver
3,996,627 A	12/1976	Deeg et al.
4,030,480 A	6/1977	Meyer

4,037,604 A	7/1977	Newkirk
4,039,827 A	8/1977	Zdrok et al.
4,065,816 A *	1/1978	Sawyer ..... 206/438
4,071,272 A	1/1978	Drdlik

(Continued)

**FOREIGN PATENT DOCUMENTS**

DE 3208729 A1 9/1983

(Continued)

**OTHER PUBLICATIONS**

Lang, Alan et al.; U.S. Appl. No. 11/738,349 entitled "Biomechanical design of intracorneal inlays," filed Apr. 20, 2007.

Churms, P.W., The Theory and Computation of Optical Modifications to the Cornea in Refractive Keratoplasty, American Journal of Optometry & Physiological Optics, 56:2, pp. 67-74, Feb. 1979.

(Continued)

*Primary Examiner* — Ryan Severson

*Assistant Examiner* — Ashley Cronin

(74) *Attorney, Agent, or Firm* — Shay Glenn LLP

(57) **ABSTRACT**

Provided therein are apparatuses, systems and methods for storing and retrieving a corneal implant and for delivering the corneal implant in or on the cornea. In an embodiment, a insertion system comprises an inserter for delivering a corneal implant to a desired location in or on the cornea. The inserter has a holding space at its distal end for holding a corneal implant therein. A solution may substantially fill the holding space with the corneal implant to keep the implant hydrated and to hold the implant in the holding space by the surface tension of the solution. The corneal implant may be preloaded in the holding space of the inserter and stored in a storage container filled with storage fluid, e.g., saline, until use. To deliver the corneal implant, the inserter is positioned at the desired location, and the corneal implant released from the holding space of the inserter.

**20 Claims, 14 Drawing Sheets**

